

Biological Evaluation of Hemlock Woolly Adelgid at Grey Towers



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Abstract

In September 2018, Forest Health Protection personnel from the U.S. Forest Service, U.S. Department of Agriculture, Northeastern Area, State and Private Forestry Field Office in Morgantown, WV, visited USDA Forest Service, Grey Towers National Historic Site to inspect hemlock trees. The purpose of the survey was to see if hemlock woolly adelgid (HWA), *Adelges tsugae*, was present and determine the need for management activities to prevent HWA-caused tree mortality and to develop strategies to preserve the hemlock resource in the high visitor use areas, as well as the hemlock stand located behind the mansion. Hemlock woolly adelgid is present throughout the survey areas at low levels. Elongated hemlock scale (EHS), *Fiorinia externa*, is also present on hemlocks at Grey Towers. It is recommended that a hemlock management plan be developed and HWA/EHS treatment take place to protect the hemlock resources at Grey Towers.

Purpose and Need

In the summer of 2018, an employee of the Forest Health Protection unit of the Forest Service, Northeastern Area, State and Private Forestry Field Office (MFO) in Morgantown, WV, was attending a training at Grey Towers and had a discussion with Bill Dauer, the Director at USDA Forest Service, Grey Towers National Historic Site. Mr. Dauer was interested in having our office prepare a HWA biological evaluation for Grey Towers to determine if HWA treatment was necessary.

Species Evaluation/Background

Hemlock woolly adelgid, originally from Asia, was first discovered on the East Coast in Virginia in 1951, and has become a serious pest of eastern hemlock in the Northeastern States.

HWA feeding can kill a mature tree in about 5-7 years. This tiny insect feeds on all age classes of hemlock, from seedlings to mature and old-growth trees. Dispersal and movement of HWA are associated with wind, birds, deer, and other forest-dwelling mammals. Humans also move the adelgid on infested nursery stock and during logging and recreational activities. Natural enemies capable of maintaining low-level HWA populations are nonexistent in Eastern North America.

HWA produces a white, woolly coat that is easily observed because it contrasts with the hemlock foliage. Look for the presence or absence of the white, woolly masses of HWA at the base of needles and on the underside of hemlock branches. In some cases, usually late summer to early fall, HWA nymphs may be present but not yet covered by a white, woolly mass. Not finding HWA on the lower branches does not mean they are not present. In many instances, high levels of HWA can be found in the upper canopy of trees while nothing is detected in the lower canopy.

HWA populations became established in the late 1990's at Grey Towers. HWA populations have fluctuated throughout the years, winter mortality has probably been a factor in keeping populations low for most years. Elongated hemlock scale has also been observed on hemlocks at Grey Towers. EHS is native to Japan. Scale populations build slowly on healthy trees and more quickly on stressed ones.

Over the years, USDA, FHP, MFO personnel have treated individual hemlocks within the deer fence of the Pinchot Timeline Trail area (high visitor use) with imidacloprid (2007 and 2016) for HWA and dinotefuran (2007) for trees with HWA and EHS. Hemlock trees in the woodlot behind the mansion have never received treatment and now some trees show signs of stressed and stunted new growth.

Project Location/Description

Grey Towers National Historic Site is 101.7 acres and located in the town of Milford, in Pike County, PA, near the border of New Jersey and New York. It was once the home of Gifford Pinchot, founder of the United States Forest Service (USFS). In 1963 it was transferred to the USFS in order to maintain the Pinchot legacy. The USFS works with many partners to carry on the legacy by delivering public programs, interpretive tours, conferences, seminars, and conservation education programs. Grey Towers is also maintained as a public space by the USFS, which contains beautiful grounds, historic gardens, and trails.

Project Objectives

Objectives for this evaluation: 1) to determine if HWA is present, and 2) determine if treatment is needed to protect hemlocks at Grey Towers.

Project Methods

On June 26, 2018, Amy Hill, an entomologist at USDA, Forest Service, Morgantown Forest Health Protection, was attending a training at Grey Towers. While she was there, she had a conversation with Bill Dauer, the director at Grey Towers, about having an entomologist come up and do a HWA survey and assist with funding request for tree treatment, if needed. She took a photo of a branch sample showing HWA healthy woolly egg masses. Personnel from the office made a trip to Grey Towers in the fall of 2018 and search for the presence of HWA on site.

HWA can be controlled with chemical treatments of individual trees. The value of the trees must be considered since treatments are expensive, will have to be repeated every 5-7 years, and are a long-term investment.

Region 9
USDA-FS
Grey Towers National Historic Site
PA
2019
Hemlock Woolly Adelgid Suppression
Protect developed sites, high value trees
Urban/wildland interface
Urgent
Hemlock Woolly adelgid
Eastern Hemlock
32 acres/ 640 trees

Soil injection/ basal bark

Imidacloprid/dinotefuran

According to label, varies by product

32 acres, 42,200

Submitted by: Elizabeth Hawke, Horticulturist, Grey Towers

Proposed by: William Dauer, Grey Towers Superintendent

Reviewed by: Rick Turcotte, Forest Health Group Leader, Morgantown, WV

Hemlock Woolley Adelgid (HWA) populations became established in the late 1990- early 2000s at Grey Towers. HWA populations have fluctuated throughout the years, winter mortality has probably been a factor in keeping populations low for most years. However, treatment is necessary as HWA populations can rebound very quickly and result in declining hemlock tree health. The trees in the woodlot behind the mansion are stressed and have stunted new growth; treating them while populations are low would be beneficial to tree health. Elongated hemlock scale is also present at Grey Towers. Over the years, individual hemlocks within the deer fence of the Pinchot Timeline Trail area (high visitor use) have been treated with imidacloprid and dinotefuran by USDA, FHP, MFO personnel. Treatments need to continue on those trees not treated in 2016 in this area; and also outside of the fenced area and in the woodlot behind the mansion. All funds will be used to treat hemlock trees with HWA populations on approximately 32 acres at Grey Towers. This is approximately 640 trees and will be treated by licensed pesticide contractor. The site has an IDIQ tree contractor already under contract for other pesticide treatments and maintenance. Imidacloprid be used for all hemlock trees and those trees with a high HWA population density and/or a high population of elongate hemlock scale will be treated with dinotefuran as well, as it has a quicker response for HWA control but less persistent, and is effective in EHS control. Pesticides will be applied according to label and will not exceed the maximum AI/acre. Trees will be checked annually for HWA density. Personnel from the Forest Health Group in the USDA Forest Service, State and Private Forestry, Morgantown field office have visited Grey Towers and are preparing a biological evaluation and support our request for \$42,200 for treatment of approximately 640 trees.